IN THE CLAIMS

1. (Cancelled)

2. (Previously presented) The shower head of claim 8, the coolant inlets and coolant outlets disposed along a circumferential edge of the lower one of the circular plates, the coolant inlets arranged such that each coolant inlet is separated from an adjacent coolant inlet by an angular spacing that is substantially equal to 360 degrees divided by a total number of coolant inlets, the coolant outlets arranged such that lines drawn from each of the outlets to a radial center of the lower one of the circular plates divide the lower one of the circular plates into substantially equal parts.

3. (Previously presented) The shower head of claim 2, the coolant inlets consisting of four coolant inlets, the coolant outlets consisting of four coolant outlets, the cooling lines consisting of four cooling lines.

4. (Currently amended) The shower head of claim 8, the lowermost one of the circular plates including a circumferential edge that consists of a first semicircular portion and a second semicircular portion, the coolant inlets arranged along the first semicircular portion, the coolant outlets arranged along the second semicircular portion, the cooling lines arranged such that they are parallel to one another.

5. (Previously presented) The shower head of claim 2, the coolant inlets and coolant outlets disposed along the circumferential edge of the lower one of the circular plates such that the coolant inlets and coolant outlets are arranged in pairs consisting of one coolant inlet and one coolant outlet, an angular spacing between the one coolant inlet and the one coolant outlet of each pair less than the angular spacing between the coolant inlets and an angular spacing between the coolant outlets.

6. (Currently amended) The shower head of claim 3, the four cooling lines arranged such that a path of each of the four cooling lines within the lowermost one of the circular plates forms two legs of a right triangle.

7. (Currently amended) The shower head of claim 8, the lowermost one of the circular plates including a circumferential edge that consists of a first semicircular portion and a second semicircular portion, wherein a total number of coolant inlets and a total number of coolant outlets are both even numbers, half of the coolant inlets and half of the coolant outlets arranged along the first semicircular portion, the other half of the coolant inlets and the other half of the coolant outlets arranged along the second semicircular portion, the cooling lines arranged such that they are parallel to one another.

8. (Currently amended) A shower head for supplying a reaction gas to a wafer in a process chamber, the shower head comprising circular plates, each of the circular plates arranged substantially parallel to each other in a vertically stacked arrangement, each of the circular plates having substantially the same diameter, each of the circular plates including gas paths for supplying a reaction gas to the process chamber, wherein a gap exists between central regions of adjacent ones of the circular plates, wherein a gas path included one of the circular plates and a gas path included in another of the plates are in fluid communication with each other via the gap, and wherein a lowermost one of the circular plates includes cooling lines, coolant inlets, and coolant outlets, each of the cooling lines connecting one of the coolant inlets to one of the coolant outlets, the shower head further comprising:

~~cooling lines arranged within a lower one of the circular plates;~~

~~coolant inlets arranged outside the lower one of the circular plates, wherein each coolant inlet is connected to only one cooling line;~~

~~coolant outlets arranged outside the lower one of the circular plates, wherein each coolant outlet is connected to only one cooling line;~~

a first outer cooling line arranged outside the lowermost one of the circular plates connecting the coolant inlets; and

a second outer cooling line arranged outside the lowermost one of the circular plates connecting the coolant outlets.

9-10. (Cancelled)

11. (Previously presented) The apparatus of claim 19, the heater stage configured to have an adjustable height within the process chamber, a bottom of the heater stage configured to contact an upper surface of the separating device at a lower position of the heater stage, wherein a position of the separating device remains fixed relative to the process chamber.

12. (Previously presented) The apparatus of claim 19, wherein the separating device is configured to separate the heater stage and the process chamber by a uniform distance.

13. (Previously presented) The apparatus of claim 12, wherein the heater stage and the process chamber are separated by about 2 to about 10 cm.

14. (Previously presented) The apparatus of claim 19, wherein the separating device comprises a heat-resistant material.

15. (Previously presented) The apparatus of claim 14, wherein the heat-resistant material is a ceramic material.

16. (Previously presented) The apparatus of claim 11, wherein the separating device is ring shaped, the upper surface of the separating device configured to abut a lower surface of the heater stage, a substantial portion of the upper surface of the separating device disposed directly beneath the lower surface of the heater stage.

17. (Previously presented) The apparatus of claim 19, further comprising:

a shaft installed beneath the heater stage and configured to raise and lower the heater stage; and

a shaft introduction portion configured to introduce the shaft at the bottom of the process chamber.

18. (Previously presented) The apparatus of claim 17, wherein the shaft introduction portion is formed as a flexible bellows and has a length that varies as the shaft is raised and lowered.

19. (Previously presented) An apparatus for forming a thin film, said apparatus comprising:

a process chamber having a bottom wall that defines a lowermost boundary of the process chamber;

a heater stage disposed within the process chamber and entirely above the bottom wall, the heater stage configured to support a wafer and to heat the wafer to a high temperature;

a shower head disposed above the heater stage, the shower head configured to supply a reaction gas to the wafer;

a separating device disposed beneath the heater stage, a lower surface of the separating device disposed in contact with the bottom wall, the separating device configured to separate the heater stage from the bottom wall and to reduce a volume of processing space within the process chamber; and

a process chamber cooling system configured to cool a bottom surface of the process chamber whereon the separating device is located.

20. (Cancelled)

21. (Previously presented) The apparatus of claim 27, the plurality of plates substantially circular in shape and having substantially the same diameter, the coolant inlets and coolant outlets disposed along a circumferential edge of the lower plate, the coolant outlets arranged such that each coolant outlet is separated from a nearest adjacent coolant outlet by an angular spacing that is substantially equal to 360 degrees divided by a total number of coolant outlets, the coolant inlets arranged such that lines drawn from each of the inlets to a radial center of the lowermost plate divide the lower plate into substantially equal parts.

22. (Previously presented) The apparatus of claim 21, the coolant inlets consisting of four coolant inlets, the coolant outlets consisting of four coolant outlets, and the inner cooling lines consisting of four inner cooling lines.

23. (Previously presented) The apparatus of claim 27, the plurality of plates substantially circular in shape and having substantially the same diameter, the coolant inlets and coolant outlets disposed along a circumferential edge of the lower plate, the circumferential edge consisting of a first semicircular edge and a second semicircular edge that together form a circle, the coolant inlets disposed along the first semicircular edge, the coolant outlets disposed along the second semicircular edge, and the inner cooling lines disposed parallel to each other.

24. (Previously presented) The apparatus of claim 21, the coolant inlets and coolant outlets disposed along the circumferential edge of the lower plate such that the coolant inlets and coolant outlets are arranged in pairs consisting of one coolant inlet and one coolant outlet, an angular spacing between the one coolant inlet and the one coolant outlet of each pair less than an angular spacing between the coolant inlets and an angular spacing between the coolant outlets.

25. (Previously presented) The apparatus of claim 22, the four cooling lines arranged such that a path of each of the four cooling lines within the lower plate consists of two straight lines that intersect at a right angle.

26. (Previously presented) The apparatus of claim 27, the lower plate having a substantially circular shape, the lower plate including a circumferential edge that consists of a first semicircular portion and a second semicircular portion, wherein a total number of coolant inlets and a total number of coolant outlets are both even numbers, half of the coolant inlets and half of the coolant outlets are alternately arranged along the first semicircular portion, the other half of the coolant inlets and the other half of the coolant outlets are alternately arranged along the second semicircular portion, and the cooling lines are arranged such that they are parallel to one another.

27. (Currently amended) An apparatus for forming a thin film, said apparatus comprising:

a process chamber;

a heater stage arranged in a lower portion of the process chamber and configured to support a wafer and to heat the wafer to a high temperature;

a shower head disposed in an upper portion of the process chamber and configured to supply a reaction gas to the wafer, said shower head comprising a plurality of plates having a plurality of gas paths formed therein and a shower head cooling system arranged in a lowermost one of the plurality of plates;

said cooling system comprising a plurality of coolant inlets, a plurality of coolant outlets, and a plurality of independent inner cooling lines for connecting each of the coolant inlets to one of the coolant outlets; [[and]]

a separating device arranged between the process chamber and the heater stage, the separating device arranged to separate the heater stage and a bottom of the process chamber by a substantially uniform amount, the substantially uniform amount in the range of about 2 to about 10 cm;

a first outer cooling line located outside the lowermost one of the plurality of plates and configured to connect the coolant inlets; and

a second outer cooling line located outside the lowermost one of the plurality of plates and configured to connect the coolant outlets.

28-31. (Cancelled)

32. (Previously presented) The apparatus of claim 27, wherein the separating device is formed of a heat-resistant material.

33. (Previously presented) The apparatus of claim 32, wherein the heat-resistant material is a ceramic material.

34. (Previously presented) The apparatus of claim 27, wherein the separating device is ring shaped and is configured to abut a bottom surface of the heater stage.

35. (Previously presented) The apparatus of claim 27, further comprising:

a shaft configured to raise and lower the heater stage, said shaft arranged beneath the heater stage; and

a shaft introduction portion configured to contain the shaft at the bottom of the process chamber.

36. (Previously presented) The apparatus of claim 35, wherein the shaft introduction portion comprises a flexible bellows wall having a variable length depending on the raising and lowering of the shaft.

37. (Previously presented) The apparatus of claim 27, further comprising a process chamber cooling system arranged in thermal communication with a lower portion of the process chamber, said lower portion of the process chamber supporting the separating device.

38-40. (Cancelled)

41. (Previously presented) The apparatus of claim 27, the process chamber having a bottom wall that defines a lower boundary of the process chamber, the separating device disposed such that a bottom surface of the separating device is in physical contact with the bottom wall of the process chamber.

42. (Previously presented) The apparatus of claim 19, wherein the process chamber cooling system is disposed outside the process chamber.

43. (Previously presented) The apparatus of claim 37, wherein the separating device is disposed inside the process chamber and the process chamber cooling system is disposed outside the process chamber.